Before the

Federal Communications Commission

Washington, DC 20554

In the Matter of

Expanding Flexible Use in Mid-Band Spectrum	GN Docket No 17-183
Between 3.7 and 24 GHz	

REPLY COMMENTS OF

IROBOT CORPORATION

1. INTRODUCTION

iRobot Corporation ("iRobot") provides the below reply comments to the *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz Notice of Inquiry* adopted by the Commission on August 8, 2017 (the "NOI"), specifically potential services in the 5.925-7.125 GHz band.

iRobot, a world-renowned advanced technology company headquartered in Massachusetts, designs and builds robots for consumer use. iRobot has developed some of the world's most important robots, and has a rich history steeped in innovation. iRobot robots have revealed mysteries of the Great Pyramid of Giza, found harmful subsea oil in the Gulf of Mexico, and saved thousands of lives in areas of conflict and crisis around the globe. iRobot inspired the first Micro Rovers used by NASA, changing space travel forever, deployed the first ground robots used by U.S. Forces in conflict, brought the first self-navigating FDA-approved remote presence robots to hospitals and introduced the first practical home robot with Roomba, forging a path for an entirely new category in home cleaning. iRobot has sold more than 15 million home robots since 2002.

Today, within the 5.925-7.125 GHz band, iRobot is developing, at great financial expense over several years of research and development, a Robotic Lawn Mower ("RLM") device for commercial use. As recognized by the Commission in *iRobot Corporation Request for Waiver of Section 15.250 of the Commission's Rules*, Order, 30 FCC Rcd. 8377 (2015) (the "Waiver"), iRobot's RLM device has the potential for improving quality of life for residential lawn mowing, reducing emissions and noise pollution, and reducing deaths and injuries associated with traditional lawn mowers.[1] iRobot intends to commercialize its RLM device in the U.S.

[1] iRobot has applied for and received a waiver to operate its wideband system outdoors. *iRobot Corporation Request for Waiver of Section 15.250 of the Commission's Rules*, Order, 30 FCC Rcd. 8377 (2015).

2. USE OF 5.925-7.125 GHZ BANDS FOR IROBOT

The iRobot RLM device is a Part 15 device designed to operate in the 6240-6740 MHz frequency range. The RLM will operate outdoors and will rely on stakes with attached transmitters that will be placed in the ground to communicate with the RLM. The RLM device relies on wideband technology for positioning and communication between the transmitters and the RLM. Due to its low power levels, this technology can effectively use large bandwidths while not interfering with other radio services or electronic devices.

The Commission should not open the 5.925-7.125 GHz band to U-NII usage due to the impact these new transmitters will cause to the noise floor under which existing Part 15 deployed devices are designed to operate, including future products like iRobot's RLM device. In fact, these devices are specifically designed to operate in the existing noise floor and to not significantly affect that noise floor in their frequencies of operation. The transmit powers typically associated with WiFi or 5G networks may overwhelm the transmit powers (which are less than milliwatts) of existing Part 15 deployed devices, thereby rendering them ineffective. In recognition of these issues, other regulatory bodies, in Europe and other countries, have focused solely on the lower 3 GHz bands for expanded use. *See, e.g.*, https://www.wirelessweek.com/news/2017/07/fcc-explore-use-37-ghz-24-ghz-spectrum-mobile-broadband.

Following years of significant investment in research and development, iRobot would be required – at great financial expense – to potentially re-evaluate and re-work its entire RLM system should the Commission move forward with the proposed regulations. Indeed, as noted above, the technology currently utilized by iRobot in its RLM device will be rendered potentially ineffective should the Commission adopt the proposed regulations. It is unknown whether another frequency band with sufficient bandwidth and associated industry support (*e.g.*, availability of appropriate frequency integrated circuits, specifically, transceivers) would be a suitable substitute. If a sufficiently performing substitute technology cannot be found, iRobot would be forced to significantly delay and/or cancel the launch of its RLM device in its entirety.

3. CONCLUSION

Accordingly, iRobot requests the Commission consider the 5.925 - 7.125 GHz band not be opened to U-NII usage, or, in the alternative, require that any new unlicensed users should also be subject to the already established -41.3 dBm/MHz power limit.

Respectfully submitted,

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